

Amendments to the Drawings:

The attached sheet of drawings includes changes to FIG. 4A. This sheet, which includes FIG. 4A, replaces the original sheet including FIG. 4A. In FIG. 4A, a phase processing box 403 has been deleted, a SDM 402 has been moved, and some elements 416 have been renamed to elements 418.

Attachment: Replacement Sheet

REMARKS

Specification

In the specification, the paragraphs [0027] and [0044] have been amended to correct minor editorial problems. Support for the amendment to paragraph [0027] may be found in at least FIG. 1E. No new matter has been added.

Figures

In amended FIG. 4A, a phase processing box 403 has been deleted, a SDM 402 has been moved, and some elements 416 have been renamed to elements 418. Support for the modifications to FIG. 4A may be found in at least paragraphs [0037] to [0043] and paragraph [0044]. No new matter has been added.

Summary

Claims 1-17 and 19-32 stand in this application. Claim 18 has been canceled without prejudice. Claims 1, 6, 7, 17, 21 and 26-32 have been amended. No new matter has been added. Favorable reconsideration and allowance of the standing claims are respectfully requested.

Although Applicant disagrees with the broad grounds of rejection set forth in the Office Action, Applicant has amended claims 1, 6, 7, 17, 21 and 26-32 in order to facilitate prosecution on the merits.

Claim Objections

Claims 21 and 26-32 have been objected to because of claim informalities.

Applicant respectfully requests removal of the claim objections with respect to claims 21 and 26-32 based on the above amendments made in accordance with the instructions in the Office Action.

35 U.S.C. § 101

At page 2 of the Office Action claims 1-6 and 17-23 stand rejected under 35 U.S.C. § 101 for lack of utility. Applicant respectfully traverses the rejection, and requests reconsideration and withdrawal of the § 101 rejection.

The Office Action states that “in claims 1 & 17 the applicant does not disclose neither an utility nor an application.” Applicant respectfully disagrees. According to MPEP 2106(II)(A), the claimed invention as a whole must produce a “useful, concrete and tangible” result to have a practical application.

Applicant respectfully submits that the language of claims 1 and 17 provides a useful, concrete and tangible result. Claims 1 and 17 provide, in part, for “producing a bounded phase signal that is an n-bit 2’s compliment number in the range of [-1, 1] from said input signal and producing an unwrapped phase difference signal from said bounded phase signal.” Applicant respectfully submits that the above recited language of claims 1 and 17 provides a useful, concrete and tangible result, e.g. producing a bounded phase signal and producing an unwrapped phase difference signal. As such, Application respectfully submits that claims 1 and 17, and any claims directly or indirectly depending

therefrom, are directed to statutory subject matter and removal of the § 101 rejection is respectfully requested.

35 U.S.C. § 102

At page 3 of the Office Action claims 1-5 and 12-23 stand rejected under 35 U.S.C. § 102 as being anticipated by EP 0640958 to Wildhagen (“Wildhagen”). Applicant respectfully traverses the rejection, and requests reconsideration and withdrawal of the anticipation rejection.

Applicant respectfully submits that to anticipate a claim under 35 U.S.C. § 102, the cited reference must teach every element of the claim. *See* MPEP § 2131, for example. Applicant submits that Wildhagen fails to teach each and every element recited in claims 1-5 and 12-23 and thus they define over Wildhagen. For example, with respect to claim 1, Wildhagen fails to teach, among other things, the following language:

producing a bounded phase signal that is an n-bit 2's
compliment number in the range of [-1, 1] from said input
signal.

According to the Office Action, this language is disclosed by Wildhagen at paragraph 6. Applicant respectfully disagrees.

Applicant respectfully submits that Wildhagen fails to teach, suggest or disclose the missing language. Wildhagen at the given cite, in relevant part, states:

This CORDIC-algorithm is well-known. Figure 11 and the following table 1 give a short introduction to this algorithm. Figure 11 shows the complex plane with the pointers of 5 samples of the complex baseband signal $c_1(kT)$. The argument range of the CORDIC-algorithm is limited to $[-\pi, \dots, \pi]$. Therefore, the phase $\theta(kT)$ calculated with the CORDIC-algorithm is modulo 2π divided.

In contrast, the claimed subject matter teaches “producing a bounded phase signal that is an n -bit 2’s complement number in the range of $[-1, 1]$ from said input signal.” Applicant respectfully submits that this is different than the above recited teaching of Wildhagen.

Applicant respectfully submits that Wildhagen fails to teach, suggest or disclose a bounded signal in the range of $[-1, 1]$. The Office Action states on page 4 that “it is inherent that the most CORDIC processor performs the operation of scaling the phase signal to produce a signal that is bounded in the neighborhood of $[-\pi, \pi]$ or $[-1, 1]$ if scaled or divided or normalized by π .” Applicant respectfully disagrees.

Applicant respectfully submits that he has been unable to locate any reference in Wildhagen to the scaling of a phase signal to produce a result that is a bounded signal in the range of $[-1, 1]$. The advantages of producing a bounded phase signal in the range of $[-1, 1]$, as indicated at paragraph [0007] of the present application, are that less bits are required to represent the unwrapped phase signal in a fixed-point implementation and this would therefore require a smaller die size and consume less power. Applicant respectfully submits that he has been unable to locate any language in Wildhagen that teaches the scaling or the advantages of scaling the phase signal to produce a bounded phase signal in the range of $[-1, 1]$.

Applicant respectfully submits that Wildhagen fails to disclose all the elements or features of the claimed subject matter. Accordingly, Applicant respectfully requests removal of the anticipation rejection with respect to claim 1. Furthermore, Applicant respectfully requests withdrawal of the anticipation rejection with respect to claims 2-5,

which depend from claim 1 and, therefore, contain additional features that further distinguish these claims from Wildhagen.

Claims 12 and 17 recite features similar to those recited in claim 1. Therefore, Applicant respectfully submits that claims 12 and 17 are not anticipated and are patentable over Wildhagen for reasons analogous to those presented with respect to claim 1. Accordingly, Applicant respectfully requests removal of the anticipation rejection with respect to claims 12 and 17. Furthermore, Applicant respectfully requests withdrawal of the anticipation rejection with respect to claims 13-16 and 18-23 that depend from claims 12 and 17 respectively, and therefore contain additional features that further distinguish these claims from Wildhagen.

35 U.S.C. § 103

At page 8 of the Office Action claims 6-11 and 24-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wildhagen in view of United States Patent Number 6,975,687 to Jackson et al. ("Jackson") and further in view of Marvin A. Schofield et al. "Fast Phase Unwrapping Algorithm for Interferometric Applications," Optics Letters / Vol. 28, No. 14 / July 15, 2003 ("Schofield"). Applicant respectfully traverses the rejection, and requests reconsideration and withdrawal of the obviousness rejection.

The Office Action has failed to meet its burden of establishing a *prima facie* case of obviousness. According to MPEP § 2143, three basic criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

ordinary skill in the art, to modify the reference or to combine reference teachings.

Second, there must be a reasonable expectation of success. Finally, the reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP 706.02(j).

As recited above, to form a *prima facie* case of obviousness under 35 U.S.C § 103(a) the cited references, when combined, must teach or suggest every element of the claim. See MPEP § 2143.03, for example. Applicant respectfully submits that the Office Action has not established a *prima facie* case of obviousness because the cited references, taken alone or in combination, fail to teach or suggest every element recited in claims 6-11 and 24-32. Therefore claims 6-11 and 24-32 define over Wildhagen, Jackson and Schofield whether taken alone or in combination. For example, independent claims 6 and 24 recite features similar to those recited above with respect to claim 1.

As recited above, Applicant respectfully submits that the above-recited language is not disclosed by Wildhagen. Applicant respectfully submits that Jackson and Schofield also fail to teach, suggest or disclose the missing language. Therefore, Wildhagen, Jackson and Schofield, taken alone or in combination, fail to disclose, teach or suggest the missing language. Consequently, Wildhagen, Jackson and Schofield, whether taken alone or in combination, fail to disclose, teach or suggest every element recited in independent claims 6 and 24.

Furthermore, if an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious. See MPEP § 2143.03, for example.

Accordingly, removal of the obviousness rejection with respect to claims 6 and 24 is respectfully requested. Claims 7-11 and 25-32 also are non-obvious and patentable over Wildhagen, Jackson and Schofield, taken alone or in combination, at least on the basis of their dependency from claims 6 and 24 respectively. Applicant, therefore, respectfully requests the removal of the obviousness rejection with respect to these dependent claims.

For at least the reasons given above, claims 6-11 and 24-32 are non-obvious and represent patentable subject matter in view of the cited references, whether taken alone or in combination. Accordingly, removal of the obviousness rejection with respect to claims 6-11 and 24-32 is respectfully requested. Further, Applicant submits that the above-recited novel features provide new and unexpected results not recognized by the cited references. Accordingly, Applicant submits that the claims are not anticipated nor rendered obvious in view of the cited references.

Applicant does not otherwise concede, however, the correctness of the Office Action's rejection with respect to any of the dependent claims discussed above. Accordingly, Applicant hereby reserves the right to make additional arguments as may be necessary to further distinguish the dependent claims from the cited references, taken alone or in combination, based on additional features contained in the dependent claims that were not discussed above. A detailed discussion of these differences is believed to be unnecessary at this time in view of the basic differences in the independent claims pointed out above.

It is believed that claims 1-17 and 19-32 are in allowable form. Accordingly, a timely Notice of Allowance to this effect is earnestly solicited.

Appl. No. 10/731,354
Response Dated June 13, 2007
Reply to Office Action of March 13, 2007

Docket No.: 18102
Examiner: Flores, Leon
TC/A.U. 2611

The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present patent application.

Respectfully submitted,

KACVINSKY LLC

A handwritten signature in black ink, appearing to read 'John F. Kacvinsky', written over a horizontal line.

John F. Kacvinsky, Reg. No. 40,040
Under 37 CFR 1.34(a)

Dated: June 13, 2007

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